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A61P 3/06; A61P 9/00; A61P 35/04; A61P 43/00;
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(62) Document number(s) of the earlier application(s) in
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17158770.2 / 3 205 351
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(54) **LYSOSOMAL STORAGE DISEASE ENZYME**

(57) The present invention provides compositions of recombinant human lysosomal acid lipase having particular glycosylation patterns for internalization into target cells, a vector containing the nucleic acid encoding human lysosomal acid lipase, a host cell transformed with

the vector, pharmaceutical compositions comprising the recombinant human lysosomal acid lipase and method of treating conditions associated with lysosomal acid lipase deficiency.

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	IKEDA S ET AL: "Production of recombinant human lysosomal acid lipase in Schizosaccharomyces pombe: Development of a fed-batch fermentation and purification process", JOURNAL OF BIOSCIENCE AND BIOENGINEERING, ELSEVIER, AMSTERDAM, NL, vol. 98, no. 5, January 2004 (2004-01), pages 366-373, XP004695391, ISSN: 1389-1723 * the whole document * * page 371 column 2 final paragraph to page 372 column 1 first paragraph * -----	1-13	INV. A01K67/027 C12N15/52 A61K38/46 A61K31/366 A61K31/397 A61K31/135 A61P3/06 A61K31/194 C12N9/20 A61K38/38 C12N15/86 C12N15/66 A61P1/16 A61P3/00 A61P9/00 A61P35/04 A61P43/00
Y	US 2009/297496 A1 (GRABOWSKI GREGORY A [US]) 3 December 2009 (2009-12-03) * paragraphs [0011], [0039], [0057], [0058]; claims 19-17 * -----	1-13	
Y	WO 01/56596 A1 (CHILDREN S HOSPITAL RES FOUNDA [US]) 9 August 2001 (2001-08-09) * paragraphs [0011], [0034] - [0036]; claims 56-61 * ----- -/--	1-13	TECHNICAL FIELDS SEARCHED (IPC) A61K C07K C12N C40B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 29 September 2023	Examiner Durrenberger, Anne
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	



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EPO FORM 1503 03:82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	Anderson R. A ET AL: "Cloning and expression of cDNA encoding human lysosomal acid lipase/cholesteryl ester hydrolase. Similarities to gastric and lingual lipases", The Journal of biological chemistry , 25 November 1991 (1991-11-25), pages 22479-22484, XP093087253, Bethesda, MD DOI: 10.1016/S0021-9258(18)54597-X Retrieved from the Internet: URL:https://linkinghub.elsevier.com/retrieve/pii/S002192581854597X [retrieved on 2023-09-29] * the whole document *	1-13	
Y	US 6 387 680 B1 (MERKULOV GENNADY V [US] ET AL) 14 May 2002 (2002-05-14) * the whole document *	1-13	
			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 29 September 2023	Examiner Durrenberger, Anne
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009297496 A1	03-12-2009	US 2009297496 A1	03-12-2009
		US 2014234288 A1	21-08-2014
		US 2016367645 A1	22-12-2016
		US 2019125842 A1	02-05-2019
		WO 2007030375 A2	15-03-2007
WO 0156596 A1	09-08-2001	AT 429927 T	15-05-2009
		BR 0108077 A	22-10-2002
		CA 2398995 A1	09-08-2001
		EP 1267914 A1	02-01-2003
		ES 2328446 T3	13-11-2009
		FR 15C0091 I1	22-01-2016
		JP 2003523330 A	05-08-2003
		US 2003059420 A1	27-03-2003
		US 2004223960 A1	11-11-2004
		US 2007264249 A1	15-11-2007
		US 2010239558 A1	23-09-2010
		US 2017151313 A1	01-06-2017
		US 2017296631 A1	19-10-2017
		WO 0156596 A1	09-08-2001
US 6387680 B1	14-05-2002	NONE	